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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/077,184	02/15/2002	Naokuni Muramatsu	782 219	9515

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EXAMINER	
VU, PHUONG T	

ART UNIT	PAPER NUMBER
2841	

DATE MAILED: 12/14/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/077,184	MURAMATSU ET AL.	
	Examiner	Art Unit	
	Phuong T. Vu	2841	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 October 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *39-47* is/are pending in the application.

4a) Of the above claim(s) *42-45* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *39-41,46 and 47* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *21 September 2004*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 14, 2004 has been entered.

Information Disclosure Statement

2. Regarding the information disclosure statement filed September 21, 2204 the cited foreign reference CN 1297325A has not been considered. The reference could not be reviewed as an English language abstract or translation has not been provided in the file. Although the First Office Action from the Chinese Patent Office was attached, no details about the reference could be obtained from the Chinese Patent Office Action. Furthermore, there appear to be no drawing figures associated with the foreign reference. The examiner attempted to obtain a copy of the document to verify the absence of the drawings and a translation of the document for proper consideration of the document but was not successful in obtaining the copy or the translation at the time of examination.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 39-41, 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al (US 6,380,903 B1) in view of Kitade (US 6,687,135B1). Regarding claim 39, Hayes shows (Prior Art figures 3A-3B) a connection construction between a planar antenna 30 and a circuit board installed in a wireless device, said planar antenna comprising a planar antenna element 32 and a plurality of elastically deformable pins (tips of 36, 37), the pins are formed by bending a plurality of thin strips 36, 37 projected from the side end of the planar antenna element in substantially vertical directions with respect to the plane of the planar antenna element at a plurality of portions of the side end of the planar antenna element, said circuit board having upper and lower surface planes. Hayes does not teach that said thin strips include a lower surface plane and said elastically deformable pins extend from said lower surface plane of said thin strips and that said circuit board comprises a plurality of through holes, wherein the planar antenna is electrically and mechanically connected to the circuit board by detachably inserting the elastically deformable pins into the through holes. However, Kitade discloses a circuit board 11 having upper and lower surface planes with planar metallic shield case 3 having elastically deformable pins 6, 7 formed by bending a plurality of thin strips projected from a side end of the metallic shield case in substantially vertical directions with respect to the plane of the planar metallic shield at a plurality of portions of the side end of the planar metallic shield, said thin strips including a lower surface plane (unlabeled area above 6, 7) and said elastically deformable pins extend from said

lower surface plane of said thin strips and said circuit board having upper and lower surface planes and a plurality of through holes wherein a base of said elastically deformable pins is positioned within a recess in said lower surface plane of said thin strips and the planar metallic shield is electrically and mechanically connected to the circuit board by detachably inserting the elastically deformable pins into the through holes such that the elastically deformable pins do not extend beyond the lower surface plane of the circuit board. The Kitade reference is relied upon solely for this teaching of configuration of the thin strips and the elastically deformable pins and the mechanical and electrical attachment of a planar metallic element to a circuit board by insertion of such elastically deformable pins provided on the planar metallic element into holes in a circuit board where the elastically deformable pins do not extend beyond the lower surface plane of the circuit board. This method of mounting the planar metallic shield case or any other component to a circuit board as well as other known methods such as mounting through use of frictional force, or solder, screws or other fasteners are art recognized as suitable for the same intended purpose. It would have been obvious to those skilled in the art at the time the invention was made to modify the mounting configuration of Hayes which shows mounting pins extending from the metallic element to provide holes in the circuit board as taught by Kitade to provide an easier, flexible, highly reliable and cost effective method of mounting which allows the assembly to be more easily maintained and serviced.

Regarding claim 40, Hayes shows that the planar antenna comprises a power supply strip 37 and a short circuit strip 36 formed by bending two thin strips projected

from one side end of the antenna element in a substantially vertical direction with respect to the plane of the planar antenna element. Hayes teaches providing pins extending from strips that are elastically deformable by bending and are formed at the tip portions of the strips. Kitade also teaches providing pins extending from strips that are elastically deformable by bending and are formed at the tip portions of the strips. Kitade shows that the pins are mechanically and electrically connected to the circuit board ground when inserted into the holes of the circuit board. In the above-mentioned combination, the pins of the antenna element, a power supply spring pin and a short circuit spring pin that are elastically deformable by bending would be formed at tip portions of the power supply strip and the short circuit strip. The antenna system of Hayes inherently comprises a power supply circuit and a short circuit provided on the circuit board. The above mentioned combination would necessarily provide a power supply hole and a short circuit hole each having an inner wall to which a power supply conductive layer and a short circuit conductive layer would connect to the power supply circuit and the short circuit so that the power supply spring pin and the short circuit spring pin are detachably inserted into the power supply hole and the short circuit hole of the circuit board in a bending deformable manner so as to connect mechanically and electrically the planar antenna and circuit board for the antenna assembly to function as intended.

Regarding claim 41, it would have been obvious to provide in the above mentioned combination a planar antenna which comprises a plurality of connection spring pins formed by bending a plurality of thin strips projected from a side end of the

planar antenna element in a substantially vertical direction with respect to a plane of the planar antenna element at a plurality of portions of the side end of the planar antenna element other than the portions at which the power supply strip and the short circuit strip are formed, said circuit board comprises a plurality of connection holes formed at the portions corresponding to the plural connection spring pins so as to mate with the plural connection spring pins where the power supply circuit, the short circuit, the power supply conductive layer, and the short circuit conductive layer are formed so as to not interfere with the connection of these components wherein the plural connection spring pins of the planar antenna are inserted into the plural connection holes of the circuit board in a bending deformable manner so as to connect mechanically the planar antenna and the circuit board to further secure the planar antenna. Providing additional connection spring pins would provide a more reliable attachment of the antenna to the circuit board.

Regarding claim 46, Hayes teaches that the planar antenna element may be formed from copper or any other known conductive metal compositions. It would have been obvious to those skilled in the art at the time the invention was made that the planar antenna element may be formed from any of the claimed materials as these materials are conductive, resilient, mechanically strong, and cost effective.

5. Claims 39, 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayes et al (US 6,380,903 B1) in view of Jones (US 6,338,632B1). Regarding claim 39, Hayes shows (Prior Art figures 3A-3B) a connection construction between a planar antenna 30 and a circuit board installed in a wireless device, said planar antenna

comprising a planar antenna element 32 and a plurality of elastically deformable pins (tips of 36, 37), the pins are formed by bending a plurality of thin strips 36, 37 projected from the side end of the planar antenna element in substantially vertical direction with respect to the plane of the planar antenna element at a plurality of portions of the side end of the planar antenna element, said circuit board having upper and lower surface planes. Hayes does not teach that said circuit board comprises a plurality of through holes, wherein the planar antenna is electrically and mechanically connected to the circuit board by detachably inserting the elastically deformable pins into the through holes. However, Jones discloses a circuit board 2 having upper and lower surface planes with a component having elastically deformable pins 12 formed by bending a plurality of thin strips (comprising 11, 12, 13) projected from a side end of the component. The thin strips include a lower surface plane (comprising 11, 13) and said elastically deformable pins 12 extend from said lower surface plane of said thin strips and a base of said elastically deformable pins is positioned within a recess (portions 112 provided at bottom of 11 and also recessed portion provided at bottom surface of 13) in said lower surface plane of said thin strips and the component is electrically and mechanically connected to the circuit board by detachably inserting the elastically deformable pins into the through holes in the circuit board and at the elastically deformable pins do not extend beyond the lower surface plane of the circuit board. The Jones reference is relied upon solely for this teaching of mechanically and electrically attaching a component to a circuit board by inserting elastically deformable pins on the component into holes in the circuit board where the elastically deformable pins do not

extend beyond the lower surface plane of the circuit board. This method of mounting the component to a circuit board as well as other known methods such as mounting through use of frictional force, or solder, screws or other fasteners are art recognized as suitable for the same intended purpose. It would have been obvious to those skilled in the art at the time the invention was made to modify the mounting configuration of Hayes which shows mounting pins extending from the component to provide holes in the circuit board as taught by Jones so that the component may be electrically and mechanically connected to the circuit board by inserting the pins of the metallic planar element into the holes of the circuit board to provide an easier, flexible, more reliable and cost effective method of mounting which allows the assembly to be more easily maintained and serviced.

Regarding claim 47, the inner surfaces of the through holes in the circuit board are free from a brazing material as the pins are held in the holes with a resilient press fit.

Response to Arguments

6. Applicant's arguments filed October 14, 2004 have been fully considered.

The rejection based on Hayes in combination with Zhu has been withdrawn in view of Applicant's amendments. Therefore, arguments pertaining to this rejection are moot.

Regarding the rejection based on Hayes in view of Jones, as noted above, it is believed that the claimed limitation that the base of said elastically deformable pins is positioned within a recess in said lower surface plane of said thin strips is met by the

Jones reference. The lower surface plane, referenced as comprising portions 11 and 13, has cutout recessed portions along 112 and a cutout recessed portion in the lower surface 13 (see figure 1). The pin 12 may be considered to be positioned within the recessed portions. Therefore, the rejection has been maintained.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phuong T. Vu whose telephone number is (571) 272-2111. The examiner can normally be reached on Mon. & Tues., 7:30 AM - 4:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on (571) 272-1957. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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